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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,786	03/15/2001	William D. Heavlin	F0019	5620

7590

06/28/2004

Wagner, Murabito & Hao LLP
Two North Market Street
Third Floor
San Jose, CA 95113

EXAMINER

MEHTA, ARUNKUMAR P

ART UNIT	PAPER NUMBER
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2128

DATE MAILED: 06/28/2004

8

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/808,786

Applicant(s)

HEAVLIN, WILLIAM D.

Examiner

Arunkumar P Mehta

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This application has been examined.
2. Claims 1-8 have been examined.

Specification

3. The disclosure is objected to because of the following informalities.

Appropriate correction is required.

4. Page2, line 29: it should read "...setting instead of settin...".
5. Page 5, line 41: it should read "...especially instead of expecially...".
6. Page 9, line 1: it should read "...resulting instead of sesulting...".
7. Page 15, line 21: it should read "...algorithm instead of algoritm...".
8. page 15, line 23: it should read "...algorithm instead of algorithm...".

Drawings

9. The drawings are objected to because detailed description page 4, line 28 states that the flow returns to figure 2, step I as indicated by arrow 118, while figure 2 does not show the relation of arrow 118. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

10. Claim 8 is objected to because of the following informalities: In claim 8 (w) it should read step (c) instead of ste (c). Appropriate correction is required. Also change (w) in line 2 and 3 to read (e1), (x) in line 3 and 5 to read (e2), (y) in line 5 and 6 to read (e3), (z) in line 6 to read (e4), and (aa) in line 7 to read (e5).

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Step (a) of claim 1 is vague and indefinite because it is not clear whether an idea of a product is by a human or computer. Further, the claim is ambiguous. It is not clear whether "& Wynn's Criterion" is part of the equation and it is also not clear whether it means to run Wynn's criterion after the equation.

14. Claim 3 recites the limitation "the design Uk" in lines 2, 3, and 4. There is insufficient antecedent basis for this limitation in the claim. It appears that this phrase should be "design matrix Uk".

15. Claim 4 is rejected as it is vague and indefinite, as it appears that steps (l) and (m) have been omitted.

Art Unit: 2128

16. Claim 4 is rejected because it lacks the antecedent basis for step (I). This can be corrected by changing the dependency to claim 3 and removing the words "wherein step (b)" from line 1 of claim 4.

17. Claim 4 recites the limitation "experimental design using Uk and the design Uk" in line 2. There is insufficient antecedent basis for this limitation in the claim. It appears that the phrases should be "experimental design using design matrix Uk" and "design matrix Uk" respectively.

18. Claim 5 recites the limitation "the experimental design Uk" in line 2. There is insufficient antecedent basis for this limitation in the claim. It appears that this phrase should be "the experimental design matrix Uk".

19. Claim 6 recites the limitation "the design Uk" in line 2. There is insufficient antecedent basis for this limitation in the claim. It appears that this phrase should be "the design matrix Uk".

20. Claim 7 recites the limitation "the design Uk" in line 1. There is insufficient antecedent basis for this limitation in the claim. It appears that this phrase should be "the design matrix Uk".

21. Claim 2 is rejected based on its dependency on claim 1.

Claim Rejections - 35 USC § 101

22. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The claimed invention is directed to non-statutory subject matter. The claims 1-4 are rejected. The language of the claims raises a question as to whether the

Art Unit: 2128

claims are directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. The invention is an abstract idea.

23. The claimed invention is directed to non-statutory subject matter. The claims 1-8 are rejected. The language of the claims raises a question as to whether the claims are directed merely to a mathematical algorithm that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. The invention is a mathematical algorithm.

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claim 1 is rejected under 35 U.S.C. 103 (a) as being obvious over William D. Heavlin et al ("Columnwise Construction of Response Surface Designs", Advanced Micro Devices, 1998), herein referred to as Heavlin in view of H. P. Wynn ("The sequential generation of D-optimum experimental designs", 1970), herein referred to as Wynn in further view of Schank P. et al ("An Introduction to

Art Unit: 2128

Microelectronics Manufacturing and Markets", University of California, Berkeley, 1993), herein referred as Schank.

26. As per claim 1 (f), Heavlin discloses a design matrix structure (page 191, paragraph 3.1). It would have been obvious to one of ordinary skill in the art at the time of invention was made to expand Heavlin's matrix structure and come up with a structure as recited in claim 1 (f). As per claim 1 (d), (e), and (g) Heavlin also discloses setting, generating and creating matrices (page 191, paragraph 3.1; pages 194-195, paragraph 4.4). As per claim 1 (b) Heavlin also discloses the experimental design (page 185, paragraph 2; page 186, paragraph 2).

As per claim 1 (f), Heavlin does not disclose expressly the Wynn's Criterion. However, refers to a paper by Wynn, which teaches the Wynn's criterion. Wynn discloses the basic criterion of design optimality in his paper (page 1655, paragraph 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Heavlin with Wynn in order to get optimum designs.

As per claim 1 (a) and (c), Heavlin does not disclose expressly the idea of a product and the critical variables. Schank teaches about designer conceiving a new product and the designer specifying the functional characteristics of a product (section 2).

Art Unit: 2128

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Heavlin as taught by Schank (Section 2) in order to get optimum design of a new product.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sacks, et al ("Design and Analysis of Computer Experiments", Statistical Science, 1989).

Heavlin, et al ("Dual Space Algorithms for Designing Space-Filling Experiments", 1994)

Heavlin (US 6,366,822), Heavlin (US 6,708, 073)

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arunkumar P Mehta whose telephone number is 703-605-1227. The examiner can normally be reached on 7:30-4:00.

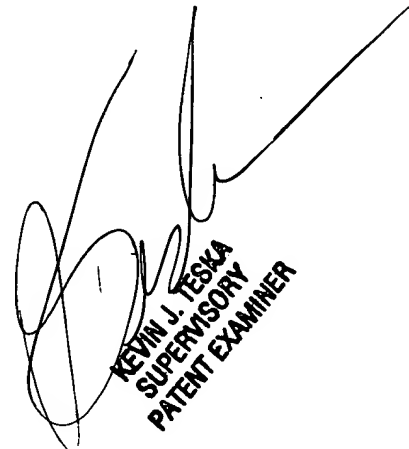
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 703-305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2128

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Arunkumar P Mehta
Examiner
Art Unit 2128

APM



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER